

Amendments to Claims

1. (Currently Amended) An electrically conductive flow field separator plate for use in a proton exchange membrane fuel cell, comprising a frame portion, a central planar portion within the frame portion and a flow field formed in a surface of the central planar portion, wherein the central planar portion is elastomeric and the frame portion is elastomeric so as to be capable of forming a seal with adjacent fuel cell components thereby eliminating the use of separate sealing elements.
2. (Canceled)
3. (Currently amended) The electrically conductive flow field separator plate of claims 1 ~~or 2~~, wherein the frame portion and the central planar portion ~~are either of different or of unitary construction, and the frame portion and optionally the central planar portion comprising comprise:~~
(a) from about 10 wt% to about 50 wt% of elastomer and from about 50 wt% to about 90 wt% of conductive filler, based on the total amount of elastomer and filler; and
(b) ~~an effective amount of~~ a cross-linking agent.
4. (Canceled)
5. (Currently Amended) The electrically conductive flow field separator plate of claims 3 ~~or 4~~ comprising from about 0.1 to about 10 parts by weight, based on 100 parts by weight of the elastomer, of the cross-linking agent.
6. (Currently Amended) The electrically conductive flow field separator plate of claims 3 ~~or 4~~ comprising from about 0.1 to about 5 parts by weight, based on 100 parts by weight of the elastomer, of the cross-linking agent.
7. (Currently Amended) The electrically conductive flow field separator plate of ~~any one of~~ claims 3 ~~to 6~~ further comprising from about 0.1 to 20 parts by weight, based on 100 parts by weight of the elastomer, of one or more additives selected from the group consisting of acid acceptors, flame retardants, plastisizers, processing aids, vulcanizing agents and mixtures thereof.
8. (Currently Amended) The electrically conductive flow field separator plate of ~~any one~~

of claims 3 to 7, wherein the elastomer is selected from the group consisting of crosslinkable thermoplastic elastomers, chlorinated elastomers, fluorinated elastomers, silicone elastomers, EPDM rubbers, natural butyl rubbers and mixtures thereof.

9. (Currently Amended) The electrically conductive flow field separator plate of ~~any one~~ of claims 3 to 7, wherein the conductive filler is selected from the group consisting of conductive graphite powders, graphite fibres, carbon black, carbon fibres, conductive ceramic fillers, metal fillers metal-coated fillers, inherent conductive polymers and mixtures thereof.
10. (Currently Amended) The electrically conductive flow field separator plate of ~~any one~~ of claims 3 to 7 wherein the elastomer is a chlorinated elastomer and the conductive filler is selected from graphite powders, graphite fibres and mixtures thereof.
11. (Currently Amended) The electrically conductive flow field separator plate of ~~any one~~ of claims 1-10 comprising flow fields on both surfaces of the central planar portion.
12. (Currently Amended) The electrically conductive flow field separator plate of ~~any one~~ of claims 1-11 having a bulk resistivity of less than 10 ohm-cm.
13. (Currently Amended) A method of making an electrically conductive flow field separator plate for use in a proton exchange membrane fuel cell, wherein the plate comprises a frame portion, a central planar portion within the frame portion and a flow field formed in a surface of the central planar portion, the method comprising:
 - (a) mixing from about 10 wt% to about 50 wt% of elastomer and from about 50 wt% to about 90 wt% of conductive filler, based on the total amount of elastomer and filler, and ~~an effective amount of~~ a cross-linking agent to form a blend; and
 - (b) molding the blend by applying sufficient heat and pressure to form the plate, wherein the frame portion is elastomeric so as to be capable of forming a seal with adjacent fuel cell components thereby eliminating the use of separate sealing elements.
14. (Original) The method of claim 13, wherein in step (a), from about 15 wt% to about 30 wt% of elastomer; and from about 70 wt% to about 85 wt% of conductive

filler, based on the total amount of elastomer and filler, are mixed to form the blend.

15. (Currently Amended) The method of claims 13 ~~or 14~~ wherein about 0.1 to about 10 parts by weight, based on 100 parts by weight of the elastomer, of the cross-linking agent are mixed to form the blend.
16. (Currently Amended) The method of claims 13 ~~or 14~~ wherein about 0.1 to about 5 parts by weight, based on 100 parts by weight of the elastomer, of the cross-linking agent are mixed to form the blend.
17. (Currently Amended) The method of ~~any one of~~ claims 13 ~~to~~ 16 wherein in step (a), from about 0.1 to 20 parts by weight, based on 100 parts by weight of the elastomer, of one or more additives selected from the group consisting of acid acceptors, flame retardants, plastisizers, processing aids, vulcanizing agents and mixtures thereof are mixed.
18. (Currently Amended) The method of ~~any one of~~ claims 13 ~~to~~ 17, wherein the elastomer is selected from the group consisting of crosslinkable thermoplastic elastomers, chlorinated elastomers, fluorinated elastomers, silicone elastomers, EPDM rubbers, natural butyl rubbers and mixtures thereof.
19. (Currently Amended) The method of ~~any one of~~ claims 13 ~~to~~ 17 wherein the conductive filler is selected from the group consisting of conductive graphite powders, graphite fibres, carbon black, carbon fibres, conductive ceramic fillers, metal fillers metal-coated fillers, inherent conductive polymers and mixtures thereof.
20. (Currently Amended) The method of ~~any one of~~ claims 13 ~~to~~ 17 wherein the elastomer is a chlorinated elastomer and the conductive filler is selected from graphite powders, graphite fibres and mixtures thereof.
21. (Currently Amended) The method of ~~any one of~~ claims 13-20 further comprising the step of forming a flow field on a surface the central planar portion.
22. (Currently Amended) The method of ~~any one of~~ claims 13-21 wherein the plate has a bulk resistivity of less than 10 ohm-cm.
23. (Currently Amended) The method of ~~any one of~~ claims 13-22, wherein step (a) is carried out at a mixing temperature of from about 20 to about 100°C for a mixing time

of from about 0.1 to about 60 minutes.

24. (Currently Amended) The method of ~~any one of~~ claims 13-22, wherein step (a) is carried out at a mixing temperature of from about 40 to about 80°C for a mixing time of from about 0.5 to about 20 minutes.
25. (Currently Amended) The method of ~~any one of~~ claims 13-24, wherein step (b) is carried out at a molding temperature of from about 120 to about 200°C for a molding time of from about 0.1 to about 60 minutes.
26. (Canceled)
27. (New) A fuel cell comprising:
 - a proton exchange membrane having opposite first and second sides;
 - a first catalyst layer abutting said first side of said proton exchange membrane;
 - a first gas diffusion layer abutting said first catalyst layer;
 - a first electrically conductive flow field separator plate abutting said first gas diffusion layer, said first electrically conductive flow field separator plate having a frame portion and a central planar portion within the frame portion, said frame portion of said first separator plate being elastomeric;
 - a second catalyst layer abutting said second side of said proton exchange membrane;
 - a second gas diffusion layer abutting said second catalyst layer;
 - a second electrically conductive flow field separator plate abutting said second gas diffusion layer, said second electrically conductive flow field separator plate having a frame portion and a central planar portion within the frame portion, said frame portion of said second separator plate being elastomeric;
 - wherein the proton exchange membrane has an edge portion that extends beyond the first and second catalyst layers and the first and second gas diffusion layers, and wherein the elastomeric frame portion of said first separator plate seals with the first side of the proton exchange membrane at the membrane edge portion, and wherein the elastomeric frame portion of said second separator plate seals with the second side of the membrane at the membrane edge portion.